Geometric Foundations of Gravity 2025



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Chiral gauge theory of gravity and dark matter

Lorentz gauge theory of gravity with a symmetry breaking "Cartan khronon" field demonstrates its successful explanation for the Λ CDM model, with an emergent integration 3-form behaving as ideal dust. Within the chiral scheme of this theory, only the right-handed regime recovers the general relativity. A natural question that arises is what happens with the left-handed gravity? When both right- and left- handed gravity are included, we find the integration 3-form is essential to formulate non-trivial cosmology. This talk discusses cosmology based on both-handed gauge theory of gravity and why the integration 3-form is a compelling dark matter candidate.

Author:ZHENG, Lucy (University of Tartu)Presenter:ZHENG, Lucy (University of Tartu)

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